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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/474,435

12/28/1999

Yongwei Cao

16517.044/15473B

2233

28381 7590 07/11/2007

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EXAMINER

SALMON, KATHERINE D

ART UNIT

PAPER NUMBER

1634

MAIL DATE

DELIVERY MODE

07/11/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

09/474,435

Applicant(s)

CAO ET AL.

Examiner

Katherine Salmon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,6-8,12-14,19-21,24-28 and 32-38 is/are pending in the application.
- 4a) Of the above claim(s) 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,6-8,12-14,19-21,27,28 and 32-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/14/2001</u> . | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I Claims 2, 6-8, 12-14, 19-21, and 24-28, and 32-38 and the transformed cell species plant cell in the reply filed on 4/20/2007 is acknowledged.

The traversal is on the ground(s) that there has not shown that a search and examination of the entire application would cause a serious burden (p. 9 Reasons for Traversal).

This is not found persuasive because as set forth in the restriction requirement mailed 3/20/2007 there is a burden to search the distinct products of transformed cells, organism cells, or plants (p. 3 section 5 of Restriction Requirement). As stated in Section 5 of the Restriction Requirement each transformation involves a different step to transform the nucleic acid into the cells or plants and searching one transformed organism would not necessarily provide descriptive information on another transformed agent.

The requirement is still deemed proper and is therefore made FINAL.

### ***Priority***

2. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 60/114151 filed 12/29/1998; 60/120644 filed 2/18/1999; 60/135825 filed 5/24/1999; 60/139932 filed 6/21/1999; 60/143994 filed 7/15/1999; 60/155422 filed 9/23/1999, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. In the preliminary Amendment filed 4/30/2001 amended the instant specification to provide priority to the above application numbers. After a review of the prior applications, it does not appear that the instant claims have support in the above priority applications. The sequence identifiers in each case do not seem to correspond to the sequence identifiers in the instant case and therefore it does not seem that the prior filed applications have support for SEQ ID NO. 5272. For example, Application 60/114151 does not contain a SEQ ID No. 5272 and Application 60/135825 and 60/120644 both contain SEQ ID NO. 5272, but these sequences are not the same as the instantly claimed. In order to obtain priority of the prior filed applications, applicant is requested to disclose the specific sequence identifiers in each prior filed application which is identical to SEQ ID NO. 5272 of the instant application.

***Specification***

3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Specifically browser-executable code has been found on p. 9 lines 3-5; p. 36 lines 9 and 24; and p. 40 line 21.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 6-8, 12-14, 19-21, 27-28, and 32-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 6 are indefinite over the phrase "having the" in line 2 of Claim 2. It is unclear the "metes and bounds" of the claim because it is not clear if the substantially purified nucleic acid molecule can contain more nucleic acids than SEQ ID No. 5272. In other words it is unclear, by the language, if the substantially purified nucleic acid molecule "comprises", "consists", or have another degree of relationship with SEQ ID No. 5272 because the term "having the" is not defined. It is noted that in the following rejections, the phrase is being interpreted as "comprising".

Claims 2, 6-8, 12-14, 19-21, 27-28 and 32-38 are indefinite over the phrase "complement thereof". It is unclear the metes and bounds of this phrase because it is not known what is meant by "complements". Therefore "complements" can be

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interpreted as the full complement of the entire sequence of SEQ ID No. 5272, or any percentage of complement, e.g. 10%, or 80% and any fragment size of SEQ ID NO. 5272. It is suggested that the claim be amended to e.g. "the complement" in order to overcome the indefiniteness of the phrase.

Claims 7 and 8 are indefinite over the phrase "having the" in line 2 of Claim 7. It is unclear the "metes and bounds" of the claim because it is not clear if the substantially purified nucleic acid molecule can contain more nucleic acids than SEQ ID No. 5272. In other words it is unclear, by the language, if the substantially purified nucleic acid molecule "comprises", "consists", or have another degree of relationship with SEQ ID No. 5272 because the term "having the" is not defined. It is noted that in the following rejections, the phrase is being interpreted as "comprising".

The term "sufficient" in claims 7 and 8 is a relative term, which renders the claim indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how much stability in the annealing should the first nucleic acid molecule to the second nucleic acid molecule to have sufficient stability.

Claims 12-14 are indefinite over the phrase "having the" in line 2 of Claim 12. It is unclear the "metes and bounds" of the claim because it is not clear if the substantially purified nucleic acid molecule can contain more nucleic acids than SEQ ID No. 5272. In other words it is unclear, by the language, if the substantially purified nucleic acid molecule "comprises", "consists", or have another degree of relationship with SEQ ID

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No. 5272 because the term "having the" is not defined. It is noted that in the following rejections, the phrase is being interpreted as "comprising".

Claims 27-28, 32-38 are unclear because the phrase "between about" because the metes and bounds of the invention are not clear. As the CAFC noted, and affirmed, regarding the district court determination of this phrase in *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.* (CA FC) 18 USPQ2d 1016 at page 1031 "the court held the "at least about" claims to be invalid for indefiniteness." The claims are indefinite with regard to the number of nucleotides because it is unclear if the claims are drawn to between 15 to 100 nucleotides or another range. The use of about before 15 and 100 makes the range smaller or larger than 15 to 100.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 28 recites the

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broad recitation 18 to 50 bases, and the claim also recites 18 to 25 bases which is the narrower statement of the range/limitation. It is unclear if 18 to 50 bases need to be complementary or if 18 to 25 bases need to be complementary.

***Claim Rejections - 35 USC § 101 and 35 USC § 112, first paragraph***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 2, 6-8, 12-14, 19-21, 27-28, and 32-38 are rejected under 35 U.S.C. 101 because the claimed invention lacks a credible, substantial, specific or well-established utility.

The claims are drawn to a substantially purified nucleic acid molecules having the sequence of SEQ ID No. 5272, substantially purified nucleic acid molecules comprising fragments of SEQ ID No. 5272 (as discussed in the 35 USC 112/second paragraph below the term "complementary" is interpreted as any fragment of SEQ ID No. 5272), and to substantially purified nucleic acid comprising a nucleic acid sequence having at least 90, 98, or 100% identity to SEQ ID NO. 5272. IN view of the "% identity" language, the claims further encompass mutants, allelic and splice variants of SEQ ID No. 5272 form non-Arabidopsis species.

The claimed nucleic acids are not supported by either a specific and substantial asserted utility or a well-established utility.

The specification discloses nucleic acid contig and singleton sequences consisting of SEQ ID Nos 1 to 81,306 were isolated from a library prepared from



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*Arabidopsis thaliana* ecotype Landsberg erecta tissue (p. 3 lines 17-25 and Example 1).

The present claims are limited to nucleic acid comprising SEQ ID NO. 5272 or fragments of SEQ ID NO. 5272 having 90, 98, or 100% identity with SEQ ID No. 5272.

The specification does not state whether nucleic acid molecule of SEQ ID NO. 5272 constitutes a complete open reading frame and does not identify the location of the start and stop codons.

The specification also does not set forth a particular biological activity of SEQ ID No. 5272 nor does it describe any protein encoded by SEQ ID No. 5272. Therefore the specification has not established any specific function for SEQ ID No. 5272. Further, there has been no specific use for SEQ ID NO. 5272. The specification asserts the claimed nucleic acids can be used to determine transcriptional profiling to find, identify, and characterize counterpart gene in other species (p. 2 lines 10-15). However, such uses lack a specific and substantial utility. Such uses allow only for the identification and analysis of other nucleic acids. Because a utility has not been established for the present nucleic acid, the use of this nucleic acid to search for additional nucleic acids does not constitute a "real world" context of use.

The specification further contemplates that the nucleic acid of SEQ ID NO. 5272 can be used for mapping studies, linkage analysis, constructing transgenic plants, and screening for traits or screening for polymorphisms (p. 2-3 and 17-18). However, these uses are applicable to a broad class of molecules since all plant nucleic acids could be used for these purposes. Thereby, these uses are general and do not constitute a specific utility. While the use of the nucleic acid of SEQ ID No. 5272 in the disclosed

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methods may eventually lead one to the identification of useful traits or specific polymorphisms or may eventually allow for the generation of transgenic plants, such uses constitute further research and experimentation and do not provide a readily-available, specific and substantial real-world use.

The specification also suggests that the proteins encoded by the claimed nucleic acids could be used to generate antibodies, which could be used for detection purposes (p. 16-17). Again, because a utility has not been established for the nucleic acid or the protein encoded thereby, use of the protein to generate antibodies to isolate and study proteins constitutes a research project and does not provide a specific and substantial utility.

The specification further contemplates that the nucleic acid of SEQ ID NO. 5272 can be used for identifying markers and isolate promoters associated with proteins encoded by SEQ ID No. 5272 (15-16). The utility is not specific because it is a property of all plant nucleic acids that they could be used to search for and try to identify a polymorphism or promoter. Further, the asserted utility is not substantial because it is a utility that is performed only to accomplish additional research. As stated in Brenner v. Manson, 383 U.S. 519, 148 USPQ 689 (1966), an invention does not have utility sufficient to satisfy §101 until it is "refined and developed" to the point of providing a specific benefit in currently available form. Id at 534-35, 148 USPQ at 695. In the instant application, Applicants have not set forth a single promoter or marker, which has been identified using the claimed SEQ ID NO: 5272.

All discussions regarding polymorphisms/markers in the specification are generic in nature. There is no showing of a reasonable expectation that the claimed nucleic acids could in fact be used to identify a specific promoter or marker. Even if a marker could be identified using the claimed SEQ ID NO: 5272, the specification has not disclosed a specific and substantial use for such an uncharacterized marker. The specification does not disclose an association between any particular polymorphisms and any phenotypic trait. Polymorphisms are naturally occurring variations within sequences, which themselves may not have any meaningful use. To determine whether a nucleic acid contains a polymorphism would first require comparing the sequence of SEQ ID NO: 5272 to other newly isolated nucleic acids. Then, upon identifying a nucleic acid variation, one would need to determine whether such a variation had any meaningful use – e.g., whether the variation was associated with a particular trait or characteristic of a particular strain of plant. Therefore, the nucleic acids of SEQ ID NO: 5272 may only be used to search for polymorphisms and if such polymorphisms are identified then the functional/biological activities of the polymorphisms could potentially be elucidated. Such research projects do not constitute a “real-world” use in currently available form.

The specification asserts that the nucleic acids may also be used as markers and probes; to identify and obtain nucleic acid homologues, in microarray as gene-specific targets; for transformation of plants; to determine the level or expression of a protein or mRNA; to overexpress or suppress a desired protein. However, these utilities are all generic and are characteristic of all nucleic acids. Such uses do not constitute a specific

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utility. As with the use of a nucleic acid to detect polymorphisms, a substantial utility for the nucleic acid can only be elucidated once the function of the nucleic acid or the product encoded by the nucleic acid is determined.

The present specification does not teach a specific functional or biological activity associated with the nucleic acid of SEQ ID NO: 5272 or a protein encoded by SEQ ID NO: 5272 or an association between the claimed nucleic acids and any particular condition in plants. In the absence of such information, the skilled artisan would not know how to interpret the results of methods which determine the expression of a mRNA or protein and would not know how to use a plant that was transformed with the claimed nucleic acids. Additionally, the use of the claimed nucleic acids as a probe to detect itself does not constitute a specific utility because the result of such a use would be meaningless without additional information regarding the significance of the nucleic acid.

The use of the claimed nucleic acids to detect homologues in other plants and organisms such as alfalfa and barley (p. 21), is also not a substantial and specific utility. Since the functional activity of the presently claimed nucleic acids is unknown, and the functional activity of any putative homologues is unknown, the detection of such homologues does not provide an immediate benefit and serves only as a starting point for further research. In addition, the use of a nucleic acid in a microarray does not confer a patentable utility since all nucleic acids may be used in microarrays. Each of these asserted utilities are generic, rather than specific. Use of the claimed nucleic

acids in the above manners would not be meaningful in the absence of information regarding the specific biological activity or significance of these nucleic acids.

The U.S. Court of Appeals for the Federal Circuit recently addressed the utility requirement as it applies to nucleic acids. See In re Fisher 421 F.3d 1356, 76 USPQ2d 1225 (Fed. Cir. 2005). The Court held that 35 USC 101 requires a showing that a nucleic acid is both substantial and specific, stating that "not every 'use' that can be asserted will be sufficient to satisfy §101." The court emphasized that disclosing a substantial utility means "show[ing] that an invention is useful to the public as disclosed in its current form, not that it may be useful at some further date after further research." Simply put, to satisfy the 'substantial' utility requirement, an asserted use must show that claimed invention has a significant and presently available benefit to the public." Id. 76 USPQ2d at 1230.

The Fisher Court also held that none of the uses asserted by Applicants in that case were either substantial or specific because each of the "asserted uses represent merely hypothetical possibilities, objectives which the claimed ESTs, or any EST for that matter, could possibly achieve, but none for which they have been used in the real world." The Court concluded that "granting a patent to Fisher for its five claimed ESTs would amount to a hunting license because the claimed ESTs can be used only to gain further information about the underlying genes and the proteins encoded for by those genes. The claimed ESTs themselves are not an end of Fisher's research effort, but only tools to be used along the way in the search for a practical utility."

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The instant situation is analogous to that which was addressed in Fisher. In the present case, Applicants have not established that the claimed nucleic acid encodes for a protein with a specific and substantial biological activity, or that the nucleic acid or protein could be used to identify a particular trait or to detect a particular polymorphism or promoter of known function. Accordingly, the claimed invention is not supported by either a specific or substantial asserted utility or a well-established utility. Applicant is directed to the Utility Examination Guidelines, Federal Register, Vol. 66, No. 4, pages 1092-1099, Friday January 5, 2001.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2, 6-8, 12-14, 19-21, 27-28, and 32-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art would not know how to use the claimed invention.

***Claim Rejections - 35 USC § 112/Written Description***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 2, 6-8, 12-14, 19-21, 27-28, and 32-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 2 is drawn to a substantially purified nucleic acid molecule comprising SEQ ID NO. 5272 or complement. Claim 6 defines the nucleic acid molecule as comprising one or more of a promoter region, regulatory region or intron region or parts of said regions. Claim 7 is drawn to a substantially purified first nucleic acid molecule, which is complementary to SEQ ID No. 5272 or complement. Claim 8 defines stringency conditions. Claim 12 is drawn to a substantially purified first nucleic acid homologous to SEQ ID NO. 5272 or complement wherein at least 90% of the nucleotide sequence is identical to SEQ ID NO. 5272 or complement. Claim 13 is drawn to a nucleic acid molecule 100% identical to a nonArabidopsis thaliana homologue. Claim 14 is drawn to a substantially purified nucleic acid molecule which is at least 98% identical to SEQ ID No. 5272 or complement. Claim 19 is drawn to a transformed cell comprising a homologous or complementary nucleic acid molecule comprising SEQ ID No. 5272 or

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complement. Claims 20-21 define a transformed cell. Claims 27-28 and 32-38 is drawn to oligonucleotide nucleic acid molecules comprising between 15 0 100 nucleotides on a support.

The claims are drawn to substantially purified nucleic acids that are fragments of unknown size to SEQ ID No. 5272. The claims are drawn to any number of percent homology to SEQ ID No. 5272. Therefore the claims are drawn to a genus of nucleic acids of variants, homologues, and splice variants of SEQ ID No. 5272 without any defining characteristics of functional properties.

The claims define the nucleic acids in terms of their structure, but do not define the nucleic acids in terms of their functional properties. Accordingly, the claims are inclusive of nucleic acid molecules which have distinct biological activities from the nucleic acid of SEQ ID NO: 5272. The specification has not clearly set forth a biological activity for the nucleic acids of SEQ ID NO: 5272. Further, the specification does not set for a biological activity for putative mutant and allelic variants or splice variants or homologues of SEQ ID NO: 5272 which is encompassed by the broad claim language. Further, the specification does not describe the functional properties of the fragments of SEQ ID No. 5272 which is encompassed by the broad claim language.

The general knowledge in the art concerning homologues, mutants, allelic and splice variants does not provide any indication of how modification of the sequence of SEQ ID NO: 5272 will effect the functional properties of SEQ ID NO: 5272. The structure and function of one molecule does not provide guidance as to the structure and function of other molecules. Therefore, the description of one molecule (SEQ ID



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NO: 5272) is not representative of a genus of homologues, splice, mutant and allelic variants of SEQ ID NO: 5272 having unspecified functional activities different from that of SEQ ID NO: 5272.

*Vas-Cath Inc. V. Mahurkar*, 19 USPQ2d 1111, states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed". Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision. In *The Regents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA... requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

Accordingly, Applicants have not adequately disclosed the relevant identifying characteristics of a representative number of species within the claimed genus.

The specification fails to sufficiently describe the claimed invention in clear and exact terms so that a skilled artisan would recognize that the applicants were in possession of the claimed invention at the time of filing.

In analysis of the claims for compliance with written description requirement of 35

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U.S.C. 112, first paragraph, the written description guidelines note regarding genus/species situations that "Satisfactory disclosure of a "representative number" depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed." (See: Federal Register: December 21, 1999 (Volume 64, Number 244), revised guidelines for written description.) In the instant case, the specification fails to teach the necessary common attributes or features of the genus of encompassed nucleic acids and polymorphisms in view of the species disclosed. As such, one of skill in the art would not recognize that applicant was in possession of the genus of nucleic acids and polymorphisms encompassed by the broadly claimed invention.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See page 1116).

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405 held that:

...To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude, "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures,

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diagrams, formulas, etc., that set forth the claimed invention." *Lockwood* , 107 F.3d at 1572, 41 USPQ2d at 1966.

An adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. *Fiers v. Revel* , 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." *Id.* at 1170, 25 USPQ2d at 1606.

In conclusion, the limited information provided regarding SEQ ID No 5272 is not deemed sufficient to reasonably convey to one skilled in the art the description of all the fragments, mutants, homologues, and splice variants encompassed by the broad claim language.

Thus, having considered the breadth of the claims and the provisions of the specification, it is concluded that the specification does not provide adequate written description for the claims.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 2, 6-8, 27-28 are rejected under 35 U.S.C. 102(a) as being anticipated by GenBank Accession Number AP000604 (NCBI website October 15, 1999).

The term "complement" is not defined in the instant specification; therefore the phrase may be read broadly. The courts have stated that claims must be given their broadest reasonable interpretation consistent with the specification *in re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969); and *in re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (see MPEP 2111). The claims are given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein the phrase "complement" can be read as any fragment which shares a percent identity with SEQ ID NO. 5272.

With regard to Claim 2, GenBank Accession Number AP000604 discloses a sequence which would be considered a complement of SEQ ID NO. 5272. The alignment presented below shows that GenBank Accession Number AP000604 shares a complementary sequence to SEQ ID NO. 5272 at particular segments of the sequence.

With regard to Claim 6, GenBank Accession Number AP000604 comprises the sequence of Chromosome 3, and therefore comprises nucleic acid sequence which are parts of promoter, regulatory, or intron regions.

With regard to Claims 7-8, GenBank Accession Number AP000604, discloses a substantially purified nucleic acid molecule of a complement of SEQ ID NO. 5272. Though GenBank Accession Number AP000604 does not teach hybridization

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conditions, the Accession Number does teach the product claimed therefore would encompass the same functions as the claimed nucleic acid and would therefore hybridize with sufficient stability. MPEP §2111-14, first section, states "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." Therefore, for the purposes of examination, the functional limitations of hybridization set forth in Claims 7-8 are considered not to have structural impact and will not be treated as limitations to the claims.

Claims 27-28 are being interpreted as comprising at least about 15 to about 100 nucleotides homologous or complementary to SEQ ID No. 5272, however, the claim is not limited in the size of the oligonucleotide nucleic acid molecule or the number of complementary nucleic acids. Because of the broad claim language of "comprising", the nucleic acid could comprise more than 100 nucleotides complementary. With regard to Claims 27-28, GenBank Accession Number AP000604 discloses a sequence wherein the nucleic acid comprises between about 15 to about 100 nucleotides homologous or complementary to SEQ ID No. 5272.

### Alignment

Query represents SEQ ID NO. 5272 and Sbjct represents AP000604

Query	2009	ATAGTTGGATTACGATTACTTTTGTCTTCGGAATTACTTTTGATGTATTTTCTATTCTC	2068
Sbjct	57815	ATAGTTGGATTACGATTACTTTTGTCTTAGGAATTACTTTTGATGTATTTTCTATTCTC	57874
Query	2069	TTTTGTTTTGTTTTGATGTTGATAATAACGAATTTTCCTTGAAATAAGAAAATCTGTTTC	2128
Sbjct	57875	TTTTGTTTTGTTTTGATGTTGATAATAACGAATTTTCCTTGAAATAAGAAAATCAGTTTC	57934

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Query	2129	TTTTAAATTTACAATTTTTATTGATAATAACATAATATTCTAAGAAATTATCTTTGTTTA	2188
Sbjct	57935	TTTTCAATTTACAATTTTTATTGATAATAACATAATATTCTAAGAAATTATCTTTGTTTA	57994
Query	2189	AAAAAATTGGGAAAGAAAAGATTTCAATCTCATCTCAAAAGAACCTGATAATGACTATTG	2248
Sbjct	57995	AAAAAATTGGGAAAGAAAAGATTTCAATTTCTCATCTCAAAAGAACCTGATAATGACTATTG	58054
Query	2249	GATTACCATTATTCCGTTTCTAAAATCTTCTTACTGTTGATTAAAAAAATTAAATCTCCT	2308
Sbjct	58055	GATTACCATTATTCCGTTTCTAAAATCTTCTTACTGTTGATTAAAAAAATTAAATCTCCT	58114
Query	2309	CTAAAGAAATATCTATCATCTCAATTGGTTTCTAGACCATTTTTAATTTACGTTGAAAAGAA	2368
Sbjct	58115	CTAAAGAAATATCTATCATCTCAATTGGTTTCTAGACCATTTTTAGTTTACGTTGAAAAGAA	58174
Query	2369	AGATCAAAACAGATCAATGACACAACTATAATTAAGGCACTAAACACTAAATGTCCTAAT	2428
Sbjct	58175	AGATCAAAACAGATCAATGACACAACTATAATTAAGGCACTAAACACTAAATGTCCTAAT	58234
Query	2429	TTGCATAATGCGGGACCCATGTCAATAATATTTCTCAAACGTTGTGTTTTCTAGCCCATC	2488
Sbjct	58235	TTGCATAATGCGGGACCCATGTCAATAATATTTCTCAAACGTTGTGTTTTCTAGCCCATC	58294
Query	2489	CTTCCTCCGAATCCACGCGCCACCGTCTAAGCTGCTGCGTCATTGCACGCGCCAATTTGC	2548
Sbjct	58295	CTTCCTCCGAATCCACGCGCCACCGTCTAAGCTGCTGCGTCATTGCACGCGCCAATTTGC	58354
Query	2549	TTTCAACCGCTCGAATCATCCCAGCTGAAACTCCAGTCACATCTTCTACTTTCTTTAAAT	2608
Sbjct	58355	TTTCAACCGCTCGAATCATCCCAGCTGAAACTCCAGTCACATCTTCTACTTTCTTTAAAT	58414
Query	2609	TCTGCCACGTGCTGCTGTTCTTAACGCCGAACCAAAACGCCGCCGCTAAGAACACTCTCT	2668
Sbjct	58415	TCTGCCACGTGCTGCTGTTCTTAACGCCGAACCAAAACGCCGCCGCTAAGAACACTCTCT	58474
Query	2669	TCGTGCTCTTTGGCCTCGTCTCCACAGCCAAAGCCAAAGACGCATATGAAACGACAGCGT	2728
Sbjct	58475	TCGTGCTCTTTGGCCTCGTCTCCACAGCCAAAGCCAAAGACGCATATGAAACGACAGCGT	58534
Query	2729	TTGTTAAATCCCTGTTTAGTCCTAACTTACCACACCAATTTACAAAAATGCCATCCGCCA	2788
Sbjct	58535	TTGTTAAATCCCTGTTTAGTCCTAACTTACCACACCAATTTACAAAAATGCCATCCGCCA	58594
Query	2789	CCGTAACCGCAACGGCCTTGGCATTCACTCTGTTTTCCCTCCCTCGCGCTCTGTTTACGT	2848
Sbjct	58595	CCGTAACCGCAACGGCCTTGGCATTCACTCTGTTTTCCCTCCCTCGCGCTCTGTTTACGT	58654
Query	2849	CACGCGTCGTTGACGATAGCTCGGAGCTTGAGACACAGTCAAGAGACGAGCAGCAAGAAG	2908
Sbjct	58655	CACGCGTCGTTGACGATAGCTCGGAGCTTGAGACACAGTCAAGAGACGAGCAGCAAGAAG	58714
Query	2909	AAGACGACGATTCTGAACAACATGTTGTTCTGTTGAGGCCAAGGAAGAAGAGGACCAGAAA	2968
Sbjct	58715	AAGACGACGATTCTGAACAACATGTTGTTCTGTTGAGGCCAAGGAAGAAGAGGACCAGAAA	58774
Query	2969	CGAAATTTTGTAGTAAGAGATTTGCAATTTGGGCAAATGACACGCCGAAATGACGAGCGA	3028
Sbjct	58775	CGAAATTTTGTAGTAAGAGATTTGCAATTTGGGCAAGATGACACGCCGAAATGACGAGCGA	58834
Query	3029	AGAGAAAAATTTGAGGCATGGAACCTAGCGTCACAAGAACGGCAGAGGAAGGCAGAGTCCG	3088
Sbjct	58835	AGAGAAAAATTTGAGGCATGGAACCTAGCGTCACAAGAACGGCAGAGGAAGGCAGAGTCCG	58894
Query	3089	CGGCACAATGGAGATCAGCTTCGGCACCAAAAGCTCGAAAAGCTCACCATTGAGTCGA	3148
Sbjct	58895	CGGCACAATGGAGATCAGCTTCGGCACCAAAAGCTCGAAAAGCTCACCATTGAGTCGA	58954

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Query	3149	TCTCTCTGGATCACCAGAAAGAAGTGAGAGAGAATTGGTTTGAATGATGATGGTGGGAA	3208
Sbjct	58955	TCTCTCT-GATCACCAGAAAGAAGTGAGAGAGAATTGGTTTGAATGATGATGGTGGGAA	59013
Query	3209	GAGAGATTTAAGGAAGAGATGTAAATGATTGAGGGAGAGAAAGAGCGGTGGAGTTTTTAT	3268
Sbjct	59014	GAGAGATTTAAGGAAGAGATGTAAATGATTGAGGGAGAGAAAGAGCGGTGGAGTTTTTAT	59073
Query	3269	GGTTCATGGTTGATGAGAGTAGTCTCTTCCACAGTTCACACATCAAAGAAACTTACATGA	3328
Sbjct	59074	GGTTCATGGTTGATGAGAGTAGTCTCTTCCACAGTTCACACATCAAAGAAACTTACATGA	59133
Query	3329	GCCATAATTTTTAGGGAAATGAAATGAATGGTGTGTTGTAGAATTGGAGAGAATGACGTG	3388
Sbjct	59134	GCCATAATTTTTAGGGAAATGAAATGAATGGTGTGTTGTAGAATTGGAGAGAATGACGTG	59193
Query	3389	TCGTGAGGTTTTGAGGCTGGTGAGATTATGTGGTCATTTTTAAAACTATTACACTAGCCG	3448
Sbjct	59194	TCGTGAGGTTTTGAGGCTGGTGAGATTATGTGGTCATTTTTAAAACTATTACACTAGCCG	59253
Query	3449	CCAAGTCATTTCGTCTTCTTTTGGTGTGACGTGGAGATTTAGTCAACACTAATGTCTTTT	3508
Sbjct	59254	CCAAGTCATTTCGTCTTCTTTTGGTGTGACGTGGAGATTTAGTCAACACTAATGTCTTTT	59313
Query	3509	CAGAGACTTGGTCTCATTGCAAATTGCTTCTTCTTTCTTGGTTGCTTCCATTACAT	3568
Sbjct	59314	CAGAGACTTGGTCTCATTGCAAATTGCTTCTTCTTTCTTGGTTGCTTCCATTACAT	59373
Query	3569	TTCTTCTGCATTGTTGCAGTCTTTTATATAAACTTTTATACATTGATCTTTTGTGCAATA	3628
Sbjct	59374	TTCTTCTGCATTGTTGCAGTCTTTTATATAAACTTTTATACATTGATCTTTTGTGCAATA	59433
Query	3629	CAAAACAGAAGATAATACTCTTAATTTATAATCTAAGGAGTAAGGATACAAAACACAAGG	3688
Sbjct	59434	CAAAACAGAAGATAATACTCTTAATTTATAATCTAAGGAGTAAGGATACAAAACACAAGG	59493
Query	3689	TGTAAACTGTGGTGAACCTGTTTGGGTTCTGATCCGAAGTACACAACATAGTCTATAT	3748
Sbjct	59494	TGTAAACTGTGGTGAACCTGTTTGGGTTCTGATCCGAAGTACACAACATAGTCTATAT	59553
Query	3749	CTTGAAATCTTTCCAAAAATGGTTTCTTAAATAAAATGGTCTTTGAATAGCCAATCTAAA	3808
Sbjct	59554	CTTGAAATCTTTCCAAAAATGGTTTCTTAAATAAAAGGGTCTTTGAATAGCCAAGCTAAA	59613
Query	3809	TCCAATAGCTCTGTTAAGATATATCCATAGAGCCCCCTCCTACGAATCACACTGAGACCTC	3868
Sbjct	59614	TCCAATTGCTCTGTTAAGATATATCCATAGAGCCCCCTCCTACGAATCACACTGTGACCTC	59673
Query	3869	TCCAGAGAGTTTTACTTCTTTGGTATCCGACCATAATGCCTCTGGCGTATTCTAAATGCC	3928
Sbjct	59674	TCCAGGGAGTTTTACTTCTTTGTTATCCGACCATAATGCCTCTGGCGTATTCTAAATGCC	59733
Query	3929	GGNTTTCGTAGCA	3941
Sbjct	59734	GGTTTTCGTAGCA	59746

8. Claims 2, 6-8, and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Brennan (US Patent 5474796 December 12, 1995).

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The term "complement" is not defined in the instant specification; therefore the phrase may be read broadly. The courts have stated that claims must be given their broadest reasonable interpretation consistent with the specification *in re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969); and *in re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (see MPEP 2111). The claims are given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein the phrase "complement" can be read as any fragment which shares a percent identity with SEQ ID NO. 5272.

With regard to Claim 2, Brennan teaches the total array represents every possible permutation of the 10-mer oligonucleotide (Column 9, lines 53-55), therefore Brennan teaches a 10-mer which would be a complement to SEQ ID No. 5272.

With regard to Claim 6, Brennan teaches every possible 10-mer oligonucleotide therefore the nucleotides would comprise a part of a promoter, regulatory, or intron region because the claim language encompasses even up to one nucleotide of a promoter, regulatory or intron region.

With regard to Claims 7-8, Brennan teaches a 10-mer which would be a complement to SEQ ID No. 5272. Though Brennan does not teach hybridization conditions, Brennan does teach the product claimed therefore would encompass the same functions as the claimed nucleic acid and would therefore hybridize with sufficient stability. MPEP §2111-14, first section, states "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be



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distinguished from the prior art in terms of structure rather than function." Therefore, for the purposes of examination, the functional limitations of hybridization set fourth in Claims 7-8 are considered not to have structural impact and will not be treated as limitations to the claims.

With regard to Claims 12 and 14, Brennan teaches a substantially purified first nucleic acid molecule (e.g. a 10 mer) which is homologous to SEQ ID No. 5272. The 10 mer would comprise 10 nucleotides that are identical to 10 nucleotides of SEQ ID No. 5272 and therefore would be at least 90% identical.

With regard to Claim 13, the 10 mer that Brennan teaches would also hybridize to any other sequence, which has the same 10 nucleotide sequence (e.g. 100% identical to non-Arabidopsis thaliana homologue).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Salmon whose telephone number is (571) 272-3316. The examiner can normally be reached on Monday-Friday 8AM-430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Katherine Salmon  
Examiner  
Art Unit 1634



JEANINE A. GOLDBERG  
PRIMARY EXAMINER

7/9/07